

REMARKS

In the Official Action, the Examiner rejected claims 1-18. Applicants respectfully request reconsideration of the application in view of the remarks set forth below. Applicants believe that all pending claims are currently in condition for allowance.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 1-18 under 35 U.S.C. § 103(a) as being obvious over Blumrich (U.S. Patent No. 6,493,800) in view of Shih et al. (U.S. Patent No. 5,293,609) or in view of Arlitt et al. (U.S. Patent No. 6,272,598) and further in view of what is asserted to be a “well-known feature.” The Examiner’s rejections are too lengthy to be reproduced efficiently herein. Nonetheless, Applicants respectfully traverse the Examiner’s rejections.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination or modification to render obvious a subsequent invention, there must be some reason for the combination or modification other than the hindsight gained from the invention

itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination or modification. *See Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

The present application is directed towards improving a partitioned cache by dynamically reallocating the sizes of the cache partitions. Paragraph 14, lines 1-3. Reallocation criteria, such as a running hit average for each cache partition, may be selected based on partition behavior and may be implemented to identify cache partitions as relocation candidates. Paragraph 14, lines 3-5. One exemplary technique for determining reallocation is to make the reallocation of a particular cache partition dependent on the behavior of at least two cache partitions, wherein one cache partition is trending higher and another cache partition is trending lower. Paragraph 19, lines 2-4. By not focusing strictly on the trend for one cache partition, the size of one cache partition is not optimized at the expense of the size of another cache partition. Paragraph 19, lines 4-6. Advantageously, the process optimizes the size allocation of each cache partition based on consideration of trends in two or more cache partitions. Paragraph 19, lines 6-7.

Independent claim 1 recites a “method of cache partitioning, comprising... reallocating a size of the first cache partition if the characteristic of the first cache partition crosses an upper threshold and the characteristic of the second cache partition crosses a lower threshold.” Similarly, independent claims 7 and 13 recite, in relevant part, a system comprising “a controller configured...to reallocate a size of the first cache partition if the characteristic of the first of the plurality of cache partitions crosses an upper threshold and the characteristic of the second of the plurality of cache partitions crosses a lower threshold.”

Applicants respectfully assert that none of the references cited by the Examiner disclose these features.

As a preliminary matter, the Examiner fully discussed the rejection of claims 1-6 and rejected claims 7-18 “for the same reasons as set forth for that in claims 1-6. Page 5, paragraph 3.e. Accordingly, based on the Examiner’s rejection and the similarity in subject matter among certain features in the independent claims, the remarks below will be directed to the features recited in independent claim 1. However, Applicants respectfully submit that independent claims 7 and 13 are also allowable based at least on the remarks set forth below with respect to claim 1.

As the Examiner correctly noted in the Official Action, the Blumrich reference “does not teach a step of reallocating a size of the first cache partition if the characteristic of the first cache partition crosses an upper threshold and the characteristic of the second cache partition crosses a lower threshold.” Page 2-3, paragraph 3.a.ii. To cover this deficiency in the Blumrich reference, the Examiner relies on either the Shih et al. reference or the Arlitt et al. reference in further view of a “well-known feature.” However, as discussed further below and contrary to the Examiner’s assertions, neither of the references cited by the Examiner disclose this feature. Further, Applicants respectfully submit that the Examiner’s statement that this feature is well-known in the art is both incorrect and improper and should be either supported with a reference or withdrawn.

The Shih Reference

The Shih et al. reference does not cure the deficiencies of the Blumrich reference. Specifically, the Shih et al. reference does not disclose reallocating the size of the first cache

partition if the characteristic of the first of the plurality of cache partitions crosses an upper threshold and the characteristic of the second of the plurality of cache partitions crosses a lower threshold, as recited in the present claims.

The Shih et al. reference is directed towards a system for determining if a “page [of cache should be] ... deleted from either the demand or prefetch section of the cache.” Col. 4, lines 54-57. This determination is only made if “there is no free page available in the cache.” Col. 4, lines 54-56. The system disclosed in Shih only reallocates the cache when there is no more free space available in the cache (i.e. only a *single* threshold needs to be crossed)

In contrast, claim 1 of the present application recites, “reallocating a size of the first cache partition if the characteristic of the first partition crosses an upper threshold and the characteristic of the second cache partition crosses a lower threshold.” The Shih et al. reference does not even disclose using an upper threshold or a lower threshold, much less reallocating the cache if a characteristic crosses these thresholds. For at least this reason, the Shih et al. reference fails to cure the admitted deficiency of the Blumrich reference. Because the cited references, either alone or together, do not disclose all of the elements of the present claims, much less suggest the combination of features recited in the present claims, the cited references cannot possibly render the claimed subject matter obvious. Accordingly, Applicants respectfully request withdrawal of the Examiner’s rejection under 35 U.S.C. 103(a) and allowance of independent claims 1, 7, and 13 as well as their respective dependant claims.

The Arlitt Reference

The Arlitt et al. reference also fails to cure the deficiencies in the Blumrich reference. As with Shih et al. reference, the Arlitt et al. reference does not disclose reallocating the size of the first cache partition if the characteristic of the first of the plurality of cache partitions crosses an upper threshold and the characteristic of the second of the plurality of cache partitions crosses a lower threshold, as recited in the present claims.

The Arlitt et al. reference discloses a system where “[d]ynamic allocation of sizes allows some storage areas to increase in size by shrinking the size of other storage areas. This approach allows the storage areas that are very busy in caching objects to use more space that is allocated to the inactive storage areas.” Col. 4, lines 40-45. In contrast, claim 1 recites “reallocating the size of the first cache partition if the characteristic of the first of the plurality of cache partitions *crosses an upper threshold* and the characteristic of the second of the plurality of cache partitions *crosses a lower threshold*.” Emphasis added. As discussed above, the presently recited subject matter ensures that the size of one cache partition is not optimized at the expense of the size of another cache partition. Paragraph 19, lines 4-6. This is far different from Arlitt et al who *merely* reallocates based on which storage areas are currently busy without regard to crossing of either an upper or a lower threshold.

As with the Shih reference, the Arlitt et al. reference fails to cure the deficiencies of the Blumrich reference admitted by the Examiner. Because the neither of the references, either alone or together, disclose all of the elements of the present claims, much less suggest the combination of features recited in the present claims, the cited references cannot possibly render the claimed subject matter obvious. Accordingly, Applicants respectfully request

withdrawal of the Examiner's rejection under 35 U.S.C. 103(a), and allowance of independent claims 1, 7, and 13 as well as their respective dependant claims.

Request for Evidence to Support Official Notice

The Examiner also stated that:

setting a predetermined threshold [either upper or lower threshold]
has also been known in the pertinent art for controlling [sic] of
which cache partition should [sic] be gained more memory space
and/or which partition should give up some of its memory space.
Page 3, paragraph v.

In making this statement, the Examiner has essentially taken Official Notice of facts outside of the record that the Examiner apparently believes are capable of demonstration as being "well-known" in the art.

Applicants would like to remind the Examiner that Official Notice is only proper where the facts asserted are "capable of instant and unquestionable demonstration as being well known. For example, assertions of technical facts in areas of esoteric technology or specific knowledge of the prior art *must always be* supported by citation to some reference work recognized as standard in the pertinent art." MPEP 2144.03; *In re Ahlert*, 424 F. 2d 1088, 1091; 165 U.S.P.Q. 418, 420-21 (C.C.P.A. 1970) (emphasis added).

In this case, Applicants challenge the Examiner's assertion that "setting a predetermined threshold" in the context set forth in the above quotation from the Office Action is a well-known feature. In accordance with M.P.E.P. § 2144.03, the Applicants hereby seasonably traverse and challenge the Examiner's use of Official Notice. Specifically, Applicants respectfully request that the Examiner produce evidence in support of the Examiner's position as soon as practicable during prosecution and that the Examiner add a

reference to the rejection in the next Official Action. If the Examiner finds such a reference and applies it in combination with the presently cited references, Applicants further request that the Examiner specifically identify the portion of the newly cited reference that discloses the allegedly “well known” elements of the instant claims.

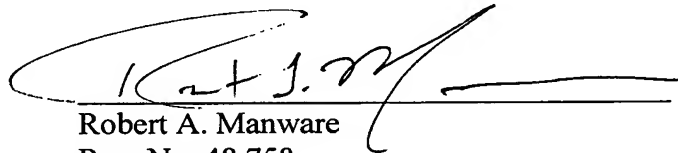
In closing, Applicants respectfully remind the Examiner that he should “never overlook the importance of his or her role in allowing claims which properly define the invention.” M.P.E.P. § 706. Here, the claims not only properly define the invention, they also clearly contain recitations that are not described, much less suggested, by any of the prior art of record. Accordingly, Applicants urge the Examiner to withdrawal the outstanding rejections and allow the pending claims.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims 1-18. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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